

Sp. 8. *Apis sinensis*.

Length 5 lines.

This species is of the same colour and general form as the male of *A. mellifica*; but the neuration of the anterior wings is different; the recurrent nervure enters the third submarginal cell nearer to its apex; the difference in the form of the posterior tibiæ is also a distinctive specific character. (See Pl. XIX. fig. 4.)

EXPLANATION OF PLATE XIX.

- Fig. 1. Posterior leg of the male of *Apis mellifica*.
 Fig. 2. " " " *Apis dorsata*.
 Fig. 3. " " " *Apis florea*.
 Fig. 4. " " " *Apis sinensis*.
 Fig. 5. Posterior leg of the Worker Bee of *Apis mellifica*.
 Fig. 6. " " " *Apis Adansonii*.
 Fig. 7. " " " *Apis zonata*.
 Fig. 8. " " " *Apis dorsata*.
 Fig. 9. " " " *Apis nigro-cincta*.
 Fig. 10. " " " *Apis indica*.
 Fig. 11. Posterior metatarsus, showing the number of transverse rows of bristles to be fourteen in *Apis dorsata*.
 Fig. 12. Showing the number to be nine in *Apis Adansonii*.
 Fig. 13. " " " eleven in *Apis nigro-cincta*.
 Fig. 14. " " " ten in *Apis indica*.
 Fig. 15. " " " ten in *Apis mellifica*.
 Fig. 16. " " " ten in *Apis florea*.

XXXVIII.—On *Raphides and other Crystals in Plants*.

By GEORGE GULLIVER, F.R.S.

[Continued from p. 212.]

Bromeliaceæ.—Besides the species of this order noticed in the 'Annals' for May last I have examined leaves of *Dasyllirion filiforme* and *D. acrostichum*, in which are a few raphides (more abundant in the pale bases of the leaves), crystal prisms, and sphæraphides; and a leaf of *Bonapartea gracilis*, which affords a profusion of raphides and a few larger crystal prisms.

Commelinaceæ.—To the former observations ('Annals,' June 1864) it may be added that *Tradescantia discolor* is also a raphis-bearing plant: a number of small quadratic crystals, or such octahedrons as were described in *Tradescantia* by Schleiden, I have likewise seen in the leaves and stem of *Tradescantia* and *Commelina*.

Araceæ.—Of the different tribes of this order in Prof. Balfour's 'Manual of Botany,' I have examined several species during last summer, and repeated and confirmed the observations given in the 'Annals' for May 1861, Sept. (page 228) and Nov. 1863,

Feb., March, and June 1864. The parts examined anew of the following plants will be noted within brackets.

Calla palustris: [leaf, flower-spike, spathe, and ovaries] all containing raphides. *Monstera deliciosa* [bits of leaves]: raphides abundant in large, hyaline, viscid cells; also some sphæraphides, especially in the petioles. *Arum maculatum* [leaves, berries, and tubers] and leaves and stem of *A. Dracunculus*: raphides abounding. *Colocasia odora*, *C. antiquorum*, and *Caladium viviparum* [leaves]: raphides plentiful in these three plants. Leaf, scape, and immature fruit of *Philodendron giganteum* and leaf of *P. pertusum*: raphides abundant. *Richardia æthiopica* [leaves]: raphides abundant, and affording a good example of biforines. *Diffenbachia maculata* [leaves] and leaf, flower-spike, and ovaries of *Orontium aquaticum*: abounding in raphides. Leaf of *Pothos acaulis*: raphides and starch plentiful. Leaf-blade and root of *Anthurium Harrisii*: a few small raphides and many cells containing small starch-granules. Leaf of *A. coriaceum*: small raphides and starch-cells, both scanty; many sphæraphides in the petiole. *Acorus Calamus* [leaves and root-stock] and leaves and flower-spike of *A. gramineus*: true raphides not seen in either of these plants; only (and that rarely) one or two solitary crystal-prisms and crystalline granules. *Typha latifolia* and *T. angustifolia* [leaves, stem, pith, and root-stock]: raphides rather plentiful. *Sparganium ramosum* and *S. simplex*: [leaves, stem, pith, peduncle, style, and outer green part of immature fruit] raphides in all these parts. *Lemna* [fronds]: all our species afford raphides, which are abundant in *L. minor* and *L. trisulca*, and comparatively scanty in *L. gibba* and *L. polyrrhiza*.

Thus, of all the plants yet examined of this order, *Acorus* is the only genus in which true raphides could not be found; and yet I have often searched for them in *A. Calamus* at all seasons, and when they were always easily found in such of the other plants as were available for comparison—to wit, *Arum*, *Typha*, *Sparganium*, and *Lemna*. The paucity of raphides in *Anthurium* appears remarkable when we consider their abundance in *Pothos* and *Orontium*.

Now our native plants above mentioned stand, in Prof. Babington's 'Manual of British Botany,' under the orders Typhaceæ, Araceæ, and Lemnaceæ, and between the orders Alismaceæ and Potamogetonaceæ. And while those species of the said three orders, Typhaceæ, Araceæ, and Lemnaceæ, with the single exception of *A. Calamus*, regularly afford raphides, the English species of the two neighbouring orders, Alismaceæ and Potamogetonaceæ, are as regularly devoid of raphides. But Prof. Lindley, in his admirable 'School Botany,' places *Acorus* in a distinct order, Acoraceæ, between Juncaceæ and Juncagi-

naceæ—two orders of which the British members are also destitute, or nearly so, of raphides.

Here, then, as far as regards the British Flora, are three orders differing, in the possession of this character of raphis-bearing, from their neighbouring orders; while, on the other hand, as we have already shown ('Annals,' March 1864, p. 214, and 'Quart. Journ. Micros. Science,' Jan. 1864), the order Hydrocharidaceæ differs, in the regular want of this character, from its neighbours Trilliaceæ, Dioscoreaceæ, and Orchidaceæ, three orders in which raphis-bearing is a constant and intrinsic, plain and certain function of the cell-life, if not of every species, certainly of all that I have examined.

Potamogetonaceæ to *Characeæ*.—We have already seen how abundant raphides are in many Endogens; but, although it is stated in some of our best and latest books of phytotomy that raphides abound in Monocotyledones generally, it is remarkable that I have never yet found true raphides in any native plant of the orders from *Potamogetonaceæ* to *Characeæ*, both inclusive, and which occupy a fifth part of the text in the 'Manual of British Botany.' Thus true raphides, after either an absence from or presence in several different preceding orders of Monocotyledones, are next so abundant in Typhaceæ, Araceæ, and Lemnaceæ, and at last suddenly cease to characterize any of the following orders, from *Potamogetonaceæ*, through the rest of the class, down to and inclusive of the Cryptogameæ Ductulosæ.

Edenbridge, April 3, 1865.

[To be continued.]

XXXIX.—*Contributions to an Insect Fauna of the Amazons Valley.* COLEOPTERA: LONGICORNES. By H. W. BATES, Esq.

[Continued from p. 225.]

- b. Thorax widest at the basal angles, gradually narrowed thence to the apex.

11. *Colobothea pimplæa*, n. sp.

C. minus elongata et attenuata, cinereo- vel griseo-fulva; capite fusco, vertice lineis duabus divergentibus cinereo-fulvis; thorace vittis septem fuscis, quarum una mediana latiore; elytris griseis, fuscō irroratis, cinereo-fulvo maculatis, fasciis tribus (apud suturam interruptis) fuscis, apice sinuato-truncatis, angulis interioribus prominulis, exterioribus spiniformibus. Long. $4\frac{1}{2}$ –5 lin. ♂ ♀.

Head dingy brown, forehead streaked with tawny, vertex with two fine tawny lines diverging on the occiput. Antennæ black or reddish, fourth, sixth, eighth, and tenth joints with a whitish